SOME OBSERVATIONS ON *ERIOCEPHALUS UMBELLULATUS* CASS.

By Margaret R. Levyns.

In the first edition of the Species Plantarum *Eriocephalus africanus* is the only species described by Linnaeus. The references to figures and descriptions given there make it highly probable that the plant thus named was the extremely common plant in the south-western districts of the Cape Province now known as *Eriocephalus umbellulatus* Cass. There is a type specimen of *E. africanus* in the Linnaean herbarium so that at some future date it will be possible to verify this assumption. The purpose of these notes is to place on record some observations made on plants of this species growing in the Cape Peninsula. These show that several of the characters made use of in separating the species in this genus are of little value.

The Leaf. The leaves are normally placed opposite one another on the stem but departures from this rule are so frequent that this character is of no practical importance. The leaf varies greatly according to habitat. When growing on dry slopes not far from the sea the leaves are usually somewhat fleshy and silvery in appearance. In more sheltered places the leaves lose their extreme fleshiness, are more slender and less silvery. The length of the leaf is most variable, the average varying from plant to plant and also on the lower and upper branches of the same plant, so that it soon becomes obvious to a field observer that leaf length is a character which must be used with extreme caution when attempting to separate two species. Examination of a large number of plants shows that whereas some plants may have all the leaves simple, it is more common to find some of the leaves lobed. In general it may be stated that the leaves borne in the centre of a bush or sheltered in some other way show a strong tendency to be lobed whereas the exposed leaves are more often entire. Some idea of the normal variability in leaf form on one bush may be gained from Fig. 1*a* where four leaves from one bush have been drawn to the same scale. It is therefore obvious that when Harvey selected entire as opposed to lobed leaves as a diagnostic character in his key to the species in the Flora Capensis, he made use of an almost useless feature in this particular group of plants.

The Capitulum.—In this genus the involucre is said to be double and in the Flora Capensis a good deal of stress is laid on the fact that in some species the inner involucre is septiferous within and in others not so. This feature has puzzled most botanists who have attempted to unravel the mysteries of the so-called specific distinctions in this genus. The explanation of this apparent difficulty is quite a simple one.

The outer involucre consists of about 5, more or less, free, silvery bracts, each with a raised, green, central portion and a scarious margin fringed with hairs. The inner involucre is quite different and consists of a few united, scarious, hairy bracts which become coriaceous at the base. The number of ray flowers varies from 3 to 5 and there are several tubular flowers in the centre. Each tubular flower arises immediately within a hairy, scarious bract, much like the inner involucre in texture and hairiness, but in the inner ones at any rate lacking the firm coriaceous base. No free bracts accompany the ray flowers but a lobe of the so-called inner involucre lies immediately without each ray flower. It is quite clear that the inner involucre is nothing more than the fused bracts of the outer flowers of the capitulum. In many cases these bracts belong entirely to the ray flowers, but in several cases a few of the bracts of the

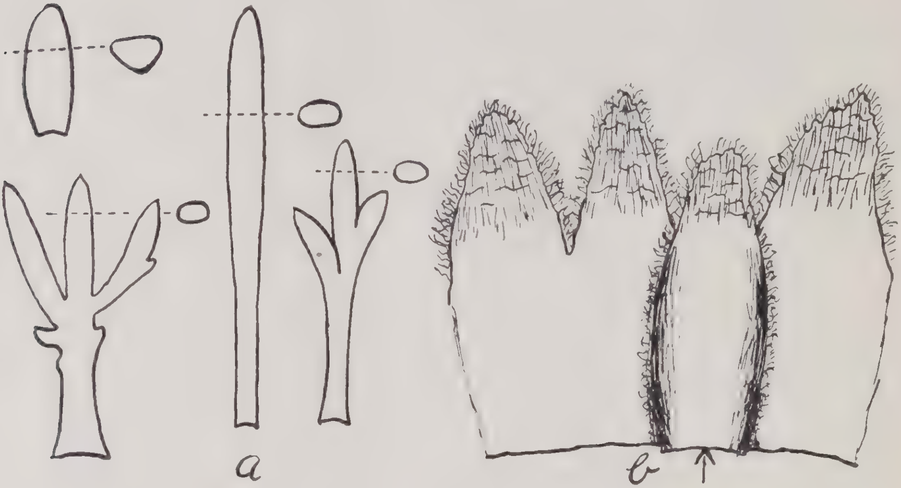

FIG. 1. *a*. Four leaves from the same plant, showing range of form and size. The outline of each leaf in section is given × 4. *b*. Part of the inner involucre spread out and viewed from within. In this case there are three bracts belonging to the ray flowers and one, partially fused with the outer ones, belonging to a tubular flower. This bract, marked with an arrow, has its edges free from the outer bracts forming the so-called septa × 15.

outer tubular flowers are seen to take part in the formation of the inner involucre. Such bracts of the tubular flowers either fuse completely with the bracts of the rays or only partially so. When the fusion is complete the involucre is quite smooth within. In cases of partial fusion, however, the edges of some of the bracts of the tubular flowers remain free and project on the inside of the involucre (Fig. 1*b*). These are the septa of various authors. As the bracts of the tubular flowers when united to the inner involucre show every stage from complete union with it to independence, it is apparent that the presence of septa is of no special significance. Both septiferous and non-septiferous involucres may occur in different capitula on the same plant.

In view of these observations on the leaves and capitula of this common species of Eriocephalus, the validity of some of the species of the genus given in the Flora Capensis becomes highly questionable. *E. umbellulatus* Cass. is separated from *E. africanus* L., *E. septulifer* DC. and *E. sericeus* DC. largely on account of its entire leaves, a character which has been shown to be quite useless for diagnostic purposes. *E. africanus* and *E. septulifer* are distinguished from *E. sericeus* by the presence of septa within the involucre in the former species. This character, too, is quite valueless. Finally, the length of the leaf which is the only important character separating *E. africanus* and *E. septulifer* is one largely controlled by the habitat. No reliable character remains by which these species may be distinguished from one another, and it is an obvious conclusion that they are all modifications of the same species. The name which appears to be the legitimate one for this species is *E. africanus* L., but for absolute certainty the type specimen must be examined and this, under the present circumstances, is impossible.

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